

REMARKS

Applicants respectfully request reconsideration of this application, and reconsideration of the Office Action of June 2, 2005. Upon entry of this paper claims 1-15 will remain pending in this application. Claims 1-9 are withdrawn. Amendments are considered advisable to independent claims 10-12, and 14 only to the extent that such amendments clarify these claims, without narrowing their scope.

The sole issue raised by the Office Action is the rejection of the claims under 35 U.S.C. §102(e) as purportedly anticipated by Paul et al. (U.S. Pat. Pub. No. 2001/0008561). The Office Action asserts Paul teaches each feature of the claims and thus anticipates the claimed invention. Applicants respectfully traverse.

The claims are drawn to moving object contour (or region) detecting apparatuses and corresponding methods. The present invention detects the contour of a moving object (or a moving object region) on the basis of a differential response type time series signal output from each of plural pixel electrodes. The present invention employs a visual pigment similar photoelectric protein layer. As amended, apparatus claims 10 and 12 clarify that Applicants' contour detector includes such pixel electrodes, and such visual pigment similar photoelectric protein layer. As amended, all of the independent claims clarify, by positive recitation, that the pixel electrode output is indicative of irradiation of the protein layer

Thereafter, the apparatus claims go on to recite (1) first means for calculating a time differential value of the time series signal output from each of the pixel electrodes, (2) second means for comparing the time differential value obtained by the first means with a threshold value for leading edge detection and a threshold value for trailing edge detection, and (3) third means for determining whether an image input to the pixel

electrodes is a leading or trailing edge of a moving object, or something else, based upon the comparison by the second means. The methods include corresponding method steps.

As an initial matter, Applicants respectfully submit that Paul neither teaches nor fairly describes a visual pigment similar photoelectric protein layer as recited in the present claims. See Fig. 4 and the discussion pertaining thereto at page 22, first paragraph, and Fig. 5 and the discussion pertaining thereto at page 23, beginning in the second paragraph, for an explanation of the powerful properties of the Applicants' recited visual pigment similar photoelectric protein layer. In short, the layer alone senses an object and its movement as the object irradiates the protein layer whereupon the layer represents the object and its motion by electric polarization. Applicants' recited pixel electrodes, in turn, provide output signals that represent such irradiation by representing the polarization performed by the protein layer. Thus, for at least this reason, Paul fails to teach or suggest each and every feature of the claims, and therefore cannot anticipate or render obvious, the claimed invention.

In Paul's system, a camera captures a live image and displays the image on a computer screen. The user can then use a mouse to select the image. Then, an initialization process occurs wherein the color, shape and location of the object are determined and stored in the computer. The actual location of the object is then computed with respect to a region centered at the estimated location using the previously obtained color, shape and location information. See Paragraph [0020]. Once tracking of the object begins, the center of the object is computed based on the color, shape and motion of the object. Applicants point out that while Paul discusses threshold values, these values are based on the angle of the color cone and the minimum length of the color vector. See Paragraphs [0023] and [0026].

Paul's system completely lacks Applicants' recited photoelectric protein layer and pixel electrodes responsive to irradiation conditions on the protein layer. Paul, then also must completely lack Applicants' recited first means for processing output from such pixel electrodes, second means for comparing the time differential value obtained by the first means with threshold values for leading and trailing edge detection, and third means for making the edge determination based upon the comparison by the second means. Paul simply neither teaches nor fairly describes Applicants' claimed arrangements or processes.

Applicants understand Paul's system as requiring the calculation of a feature amount of a target for tracking, such as the color, shape and motion of the object in the image. Accordingly, Applicants understand, unless an operator manually locates the initial position of the target object, the system cannot exercise its capability. See paragraph. [0011]. Since Paul's technique is for tracking a model base, it cannot be applied where the color and shape of the target object are unknown.

In contrast, in the present invention, it is not necessary to obtain prior information about the object for tracking. In other words, the present invention enables the user to determine initial position, and shape information. Prior knowledge of the color of the object is not required, and thus Applicants' technique can also be applied to light and shade images obtained by visualizing the data from other sensors. Also, the detection of a moving object is accomplished by a sensor, so Applicants' invention obviates complex dedicated hardware. Rather, acquisition of shape information and detection processing can be done with only very light loads on a computing machine. Furthermore, since the background, apart from a moving object, is also readily detected in the present invention, the invention can be applied to an image containing a complex background, without being affected by such background.

In view of the above remarks, Applicants submit this rejection is overcome and respectfully requests that it be withdrawn.

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Applicants respectfully submit this Amendment and the above remarks obviate the outstanding rejection in this case, thereby placing the application in condition for allowance. Allowance of this application is earnestly solicited.

If any fees under 37 C.F.R. §§1.16 or 1.17 are due in connection with this filing, please charge the fees to Deposit Account No. 02-4300; Order No. 033240.015.

If an extension of time under 37 C.F.R. §1.136 is necessary that is not accounted for in the papers filed herewith, such an extension is requested. The extension fee should be charged to Deposit Account No. 02-4300; Order No. 033240.015.

Respectfully submitted,

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